

# Welcome to the OpenShift Architecture Workshop Day 2

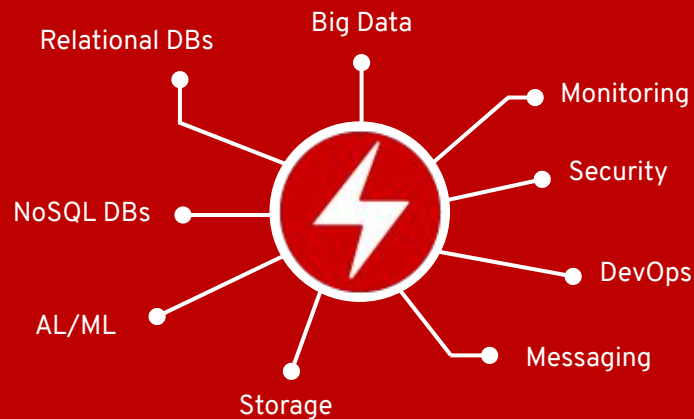


**Red Hat**  
OpenShift

# Operator Framework

# A broad ecosystem of workloads

Operator-backed services allow for a  
SaaS experience on your own infrastructure



# Red Hat Certified Operators

## DEVOPS



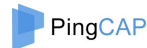
## APM



## DATA SERVICES



## DATABASE



## SECURITY



## STORAGE



# OperatorHub data sources

## Requires an online cluster

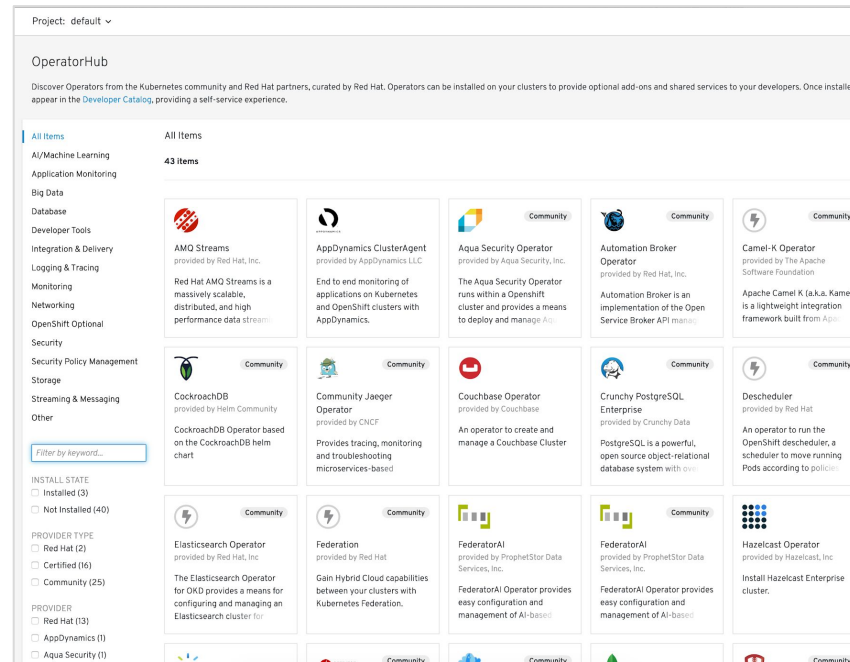
- For 4.1, the cluster must have connectivity to the internet
- Later 4.x releases will add offline capabilities

## Operator Metadata

- Stored in quay.io
- Fetches channels and available versions for each Operator

## Container Images

- Red Hat products and certified partners come from RHCC
- Community content comes from a variety of registries



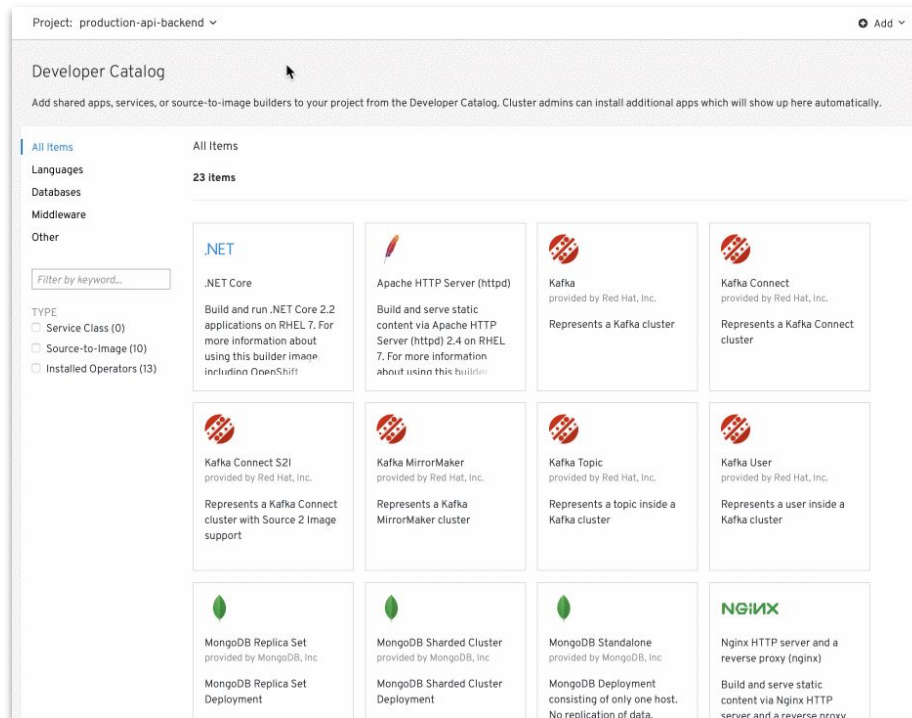
# Services ready for your developers

## New Developer Catalog aggregates apps

- Blended view of Operators, Templates and Broker backed services
- Operators can expose multiple CRDs. Example:
  - MongoDBReplicaSet
  - MongoDBSharded Cluster
  - MongoDBStandalone
- Developers can't see any of the admin screens

## Self-service is key for productivity

- Developers with access can change settings and test out new services at any time



# Operators as a First-Class Citizen

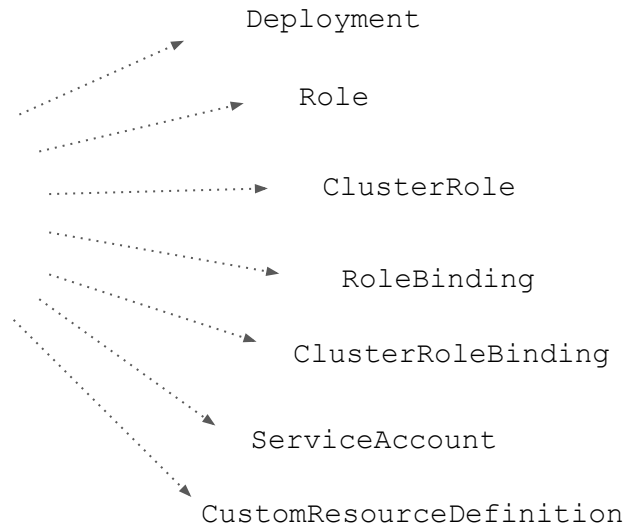


YourOperator v1.1.2  
Bundle



**OPERATOR  
LIFECYCLE MANAGER**

Operator Deployment  
Custom Resource  
Definitions  
RBAC  
API Dependencies  
Update Path  
Metadata



# Operator Lifecycle Management

Operator Catalog



**OPERATOR  
LIFECYCLE MANAGER**



Subscription for  
YourOperator



Version



YourOperator v1.1.2

YourOperator v1.1.3

YourOperator v1.2.0

YourOperator v1.2.2



Time



# Operator Lifecycle Management

Operator Catalog



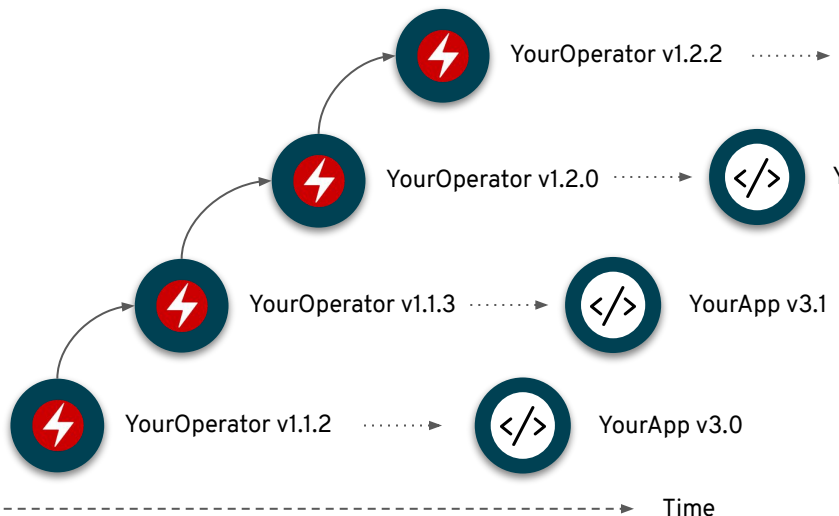
**OPERATOR  
LIFECYCLE MANAGER**



Subscription for  
YourOperator



Version



# Operator Upgrade in Detail

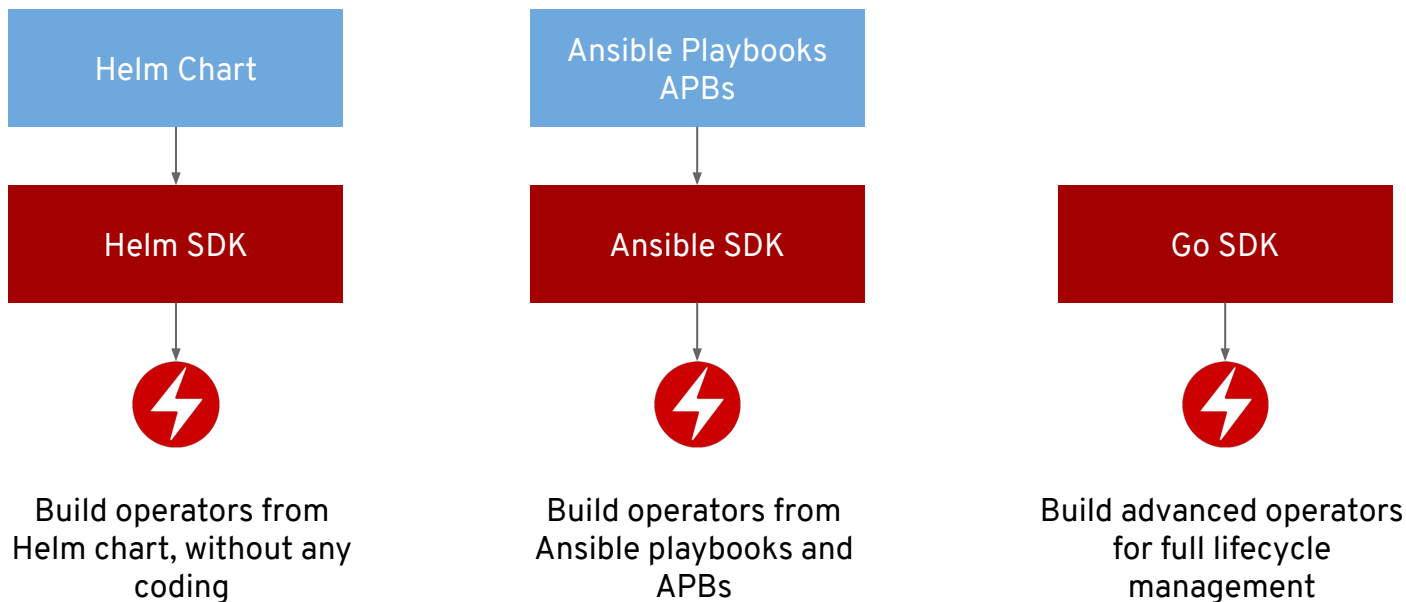
## OperatorHub facilitates upgrades of installed Operators

- Manual or automatic modes can be chosen per Operator
- The Operator itself is upgraded by OLM via Deployment and a regular rolling upgrade
- The objects managed by the Operator use built in mechanisms to maintain HA
  - Deployments/StatefulSets
  - affinity/anti-affinity
  - taints/tolerations
  - PodDisruptionBudgets
- Behavior is dependent on the maturity of the Operator
- Optional cluster components like Cluster Logging are well behaved during upgrades

The screenshot displays the Red Hat OpenShift Operator Management interface. The left sidebar shows the navigation menu with 'Operator Management' selected. The main panel shows a table of installed operators with columns for Name, Namespace, Status, Channel, and Approval Strategy. A modal window is open, showing a detailed view of the operator's status.

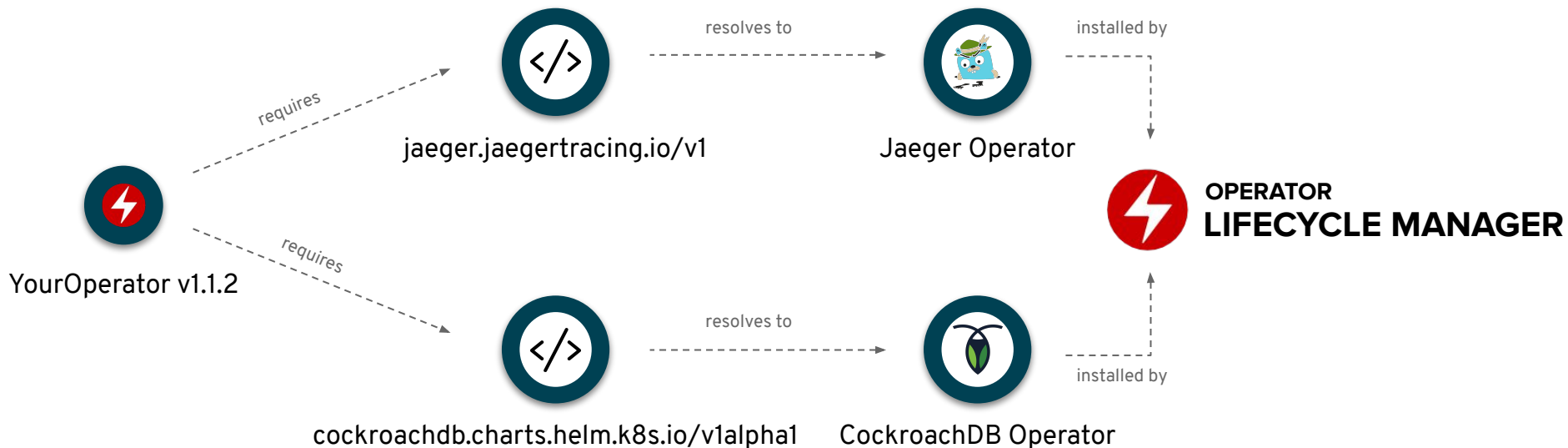
NAME	NAMESPACE	STATUS	CHANNEL	APPROVAL STRATEGY
amq-streams	openshift-operators	Up to date	stable	Automatic
cockroachdb	openshift-operators	Up to date	stable	Automatic
codeready-workspaces	codeready	Up to date	final	Automatic
couchbase-enterprise-certified	robszumski-api-backend	Up to date	preview	Automatic

# Build Operators for your apps



# Depend on other Operators

## Operator Framework Dependency Graphs



# Red Hat Middleware

## Same experience as 3.x for developers

- Admins install Service Brokers via OperatorHub
- Devs consume via Developer Catalog

## Transitioning to Operators

- First Operators are out
  - AMQ Streams (Kafka)
  - Fuse Online
  - CodeReady Workspaces
  - Business Automation (Tech Preview)
  - Data Grid
- More to follow in 2019
  - Red Hat Integration - July:
    - AMQ Interconnect, AMQ Broker
    - 3scale API Management
    - Apicurio API Designer
  - Business Automation - July (GA)
  - Red Hat Application Runtimes
    - MW Component Operator - July



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